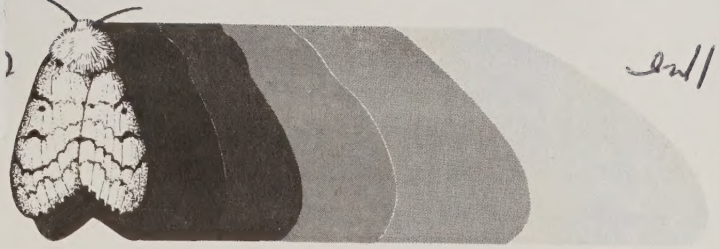
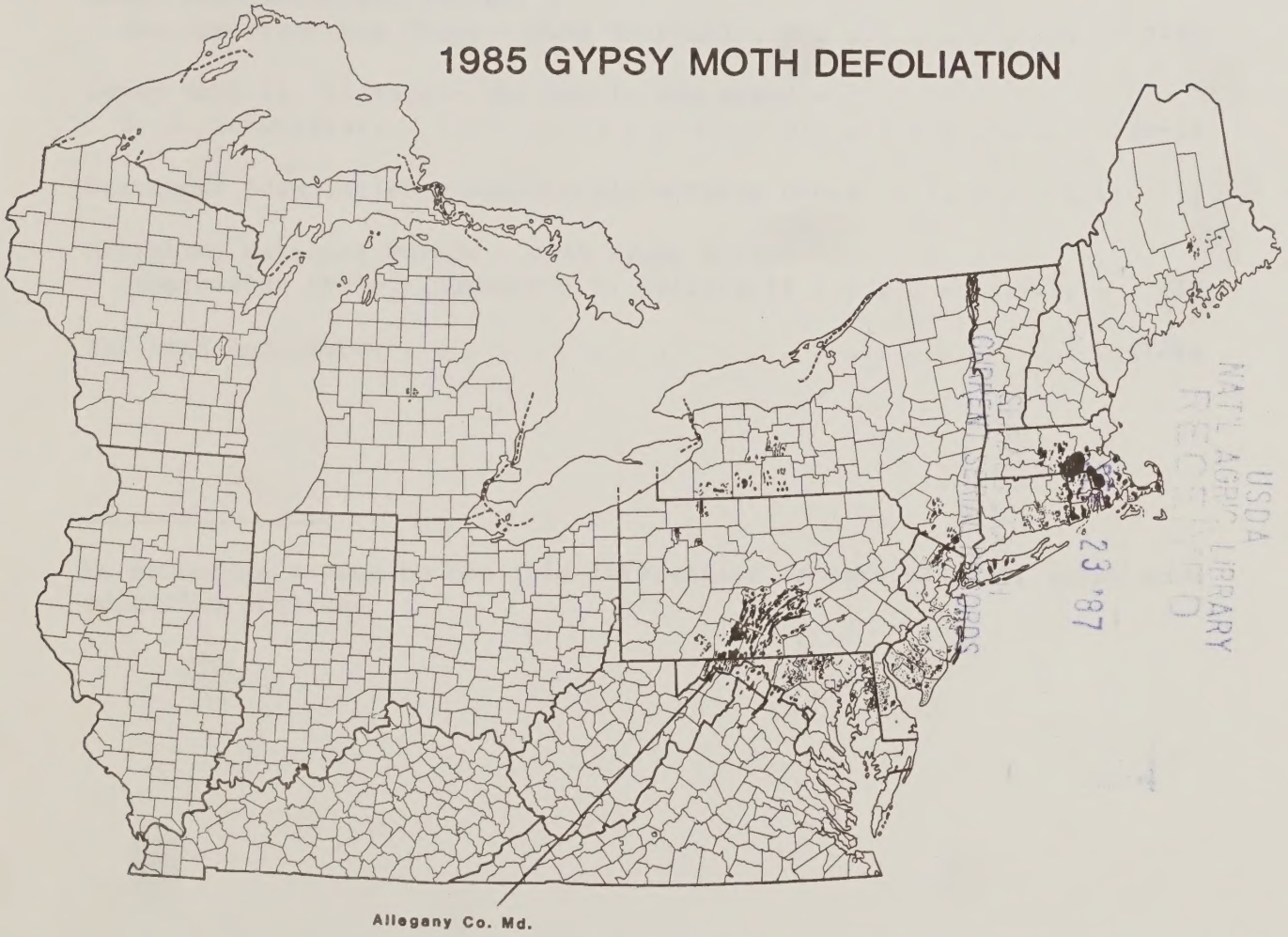


March 1986
Number 11

GYPSY MOTH NEWS

370 REED ROAD, BROOMALL, PA 19008
U.S.D.A., FOREST SERVICE

1985 GYPSY MOTH DEFOLIATION



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We encourage anyone to use this information as part of their gypsy moth education program.

Gypsy Moth Activity - 1985

As shown in the accompanying table gypsy moth defoliation has increased rather dramatically in a few areas, notably Massachusetts, Maryland, Michigan and Virginia. In Maryland, 64% or 53,518 acres of the recorded defoliation occurred in Allegany County in Maryland's western panhandle. Twenty-three percent or 26,399 of the acres treated in Maryland in 1985 also occurred in this county. Immediately to the north of Allegany County in Pennsylvania, Bedford and Huntingdon Counties account for 43% or 248,269 acres of the total defoliated acres in that state.

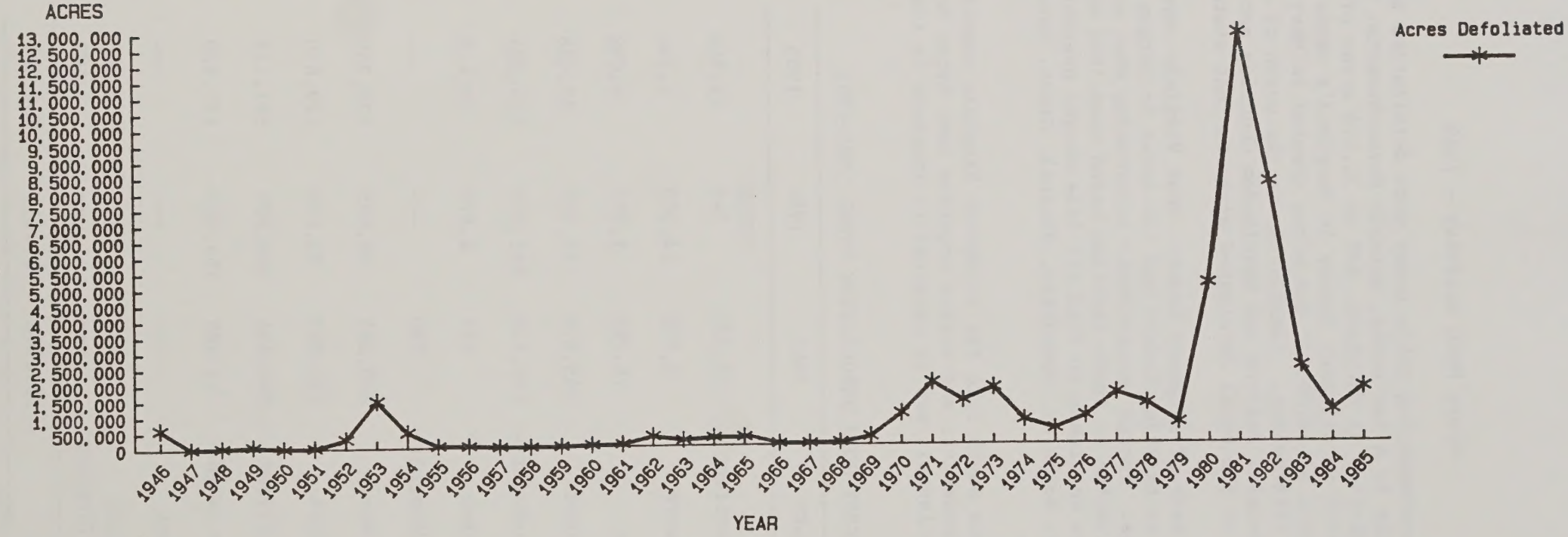
To the south and east of Allegany County, West Virginia reported 2,470 acres defoliated in Berkeley County and 140 acres in Morgan and Hampshire Counties. Though successively suppressing what would have been severe defoliation in these counties based upon 1984 egg mass surveys, the state continues to find all life stages present in Jefferson, Morgan, Berkeley, Hampshire, Mineral, Grant, Hardy, and Preston Counties.

Defoliation extends south into the northwest Virginia counties of Loudon, Clarke, Frederick, and Warren Counties (see Gypsy Moth in Virginia, in this issue), and is expected to increase in these counties next year.

GYPSY MOTH DEFOLIATION TREND 1983-1985

STATE	1983	1984	1985
		ACRES	
Connecticut	153,239	544	89,544
Delaware	2,992	14,203	5,144
Maine	16,285	1,892	6,698
Maryland	145,870	34,300	83,488
Massachusetts	148,133	185,520	414,084
Michigan	457	6,425	18,460
New Hampshire	560	---	---
New Jersey	340,285	98,695	239,350
New York	290,843	33,678	129,820
Pennsylvania	1,360,824	444,900	581,113
Rhode Island	53,880	164,600	133,920
Vermont	---	---	---
Virginia	---	374	5,200
West Virginia	---	---	2,400
TOTAL	2,513,368	985,131	1,709,221

TOTAL RECORDED GYPSY MOTH DEFOLIATION IN THE EASTERN U.S. - 1946-1985



Note:

1946-1966 - Defoliation occurred in the States of ME, NH, VT, MA, CT, RI, and NY.
1967-1978 - NJ and PA joined the list of defoliated States.
1979 - MI and DE experienced defoliation for the first time.
1980 - MD experienced its first defoliation.
1981 - a banner year for defoliation with 12 States experiencing various amounts.

USDA Forest Service Co-operative Suppression Projects Since 1980

STATE	1980	1981	1982	1983	1984	1985
			ACRES			
Delaware	---	---	---	1,100	29,120	67,000
Maine	---	400	1,910	---	---	---
Maryland	---	---	48,364	120,082	109,683	113,630
Massachusetts	---	---	4,160	1,598	---	---
New Hampshire	---	---	440	---	---	---
New Jersey	35,500	75,800	101,740	81,045	39,524	45,748
New York	20,000	63,900	10,284	---	---	---
Pennsylvania	24,800	178,200	494,743	371,723	280,017	208,793[1/]
Rhode Island	---	22,600	64,816	6,477	---	21,936
Vermont	---	---	300	---	---	---
Virginia	---	---	---	---	4,000	---
West Virginia	---	---	---	16,735	46,992	54,020
TOTAL	80,300	340,900	726,757	598,760	509,336	511,127

[1/] Allegheny N.F. treated 10,472 @ in 1985. This is the first year that National Forest lands were treated for gypsy moth control. Acres included in PA suppression figure.

USDA APHIS eradication projects conducted in 1985. For more information contact Harvey Ford, USDA APHIS, Federal Building, 6506 Belcrest Road, Room 663, Hyattsville, MD 20782.

Location	Acres	Treatment
Illinois		
Geneva	25	Mass trapping
Kildeer	27	Mass trapping
Peoria	70	Bacillus thuringiensis (Bt) followed by mass trapping (three applications)
Indiana		
Fort Wayne	40	Mass trapping
Indianapolis	70	Mass trapping
Minnesota		
Apple Valley (North)	55	Bt followed by mass trapping
Apple Valley (South)	47	Bt followed by mass trapping
Lakeville	39	Bt followed by mass trapping
Mounds View	40	Mass trapping
White Bear Lake	39	Bt followed by mass trapping (all--two applications)
North Carolina		
Watauga County	2,000	Bt--two applications
Ohio		
Darke County	80	Sterile insects (egg masses)
Oregon		
Lane County	225,000	Bt three applications (four applications in core 5,000 A.)
Tennessee		
Johnson County	42,000	Dimilin-Two applications
	3,000	Bt--Two applications
Washington		
Bellingham	2,780	Sterile insects (egg masses)
Wisconsin		
Hubertis	5	Bt followed by mass trapping (all--two applications)
Monona	45	Mass trapping
Oconomowoc	4	Bt followed by mass trapping
Sheboygan	45	Mass trapping

Oregon Update, 1984-1985

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At the end of the 1984 trapping season, Oregon faced the largest infestation of gypsy moths in the western United States - 19,019 moths caught in an approximately 1100 square mile area of Lane County. Three separate highly infested, core areas were identified within this larger area. The infestation is now subject to Federal and State Quarantine. Additional new infestations were uncovered in 1984; 2 in the Portland area and 1 in Salem, a few scattered singles were detected in western Oregon counties, and remnants of the 1984 infestation in the 1984 eradication program were detected in 5 spray blocks.

Only the Lane County infestation was targeted for eradication with insecticidal sprays in 1985. The remaining sites were either trapped at delimitation densities (where single or double catches were made in 1984) or trapped at high densities (3 traps/acre) as an eradication tactic where small infestations were delimited in 1984.

The Lane County eradication program covered 225,000 acres and employed Bacillus thuringiensis (Dipel 8L) at 16 B.I.U./acre. Three applications were made between May 1 and June 8 using 14 helicopters, each accompanied by an observation aircraft. The spray mixture was applied at 3/4 gal./acre and consisted of 2 qt. water and 1 qt. B.t., with 2% nonionic spreader-sticker. The three core areas of the infestation received larger dosages. All three were sprayed at 20 B.I.U./acre, and the core area near Pleasant Hill received a fourth application at 16 B.I.U./acre. A portion of the Pleasant Hill area with the highest egg mass population (1000 egg masses/acre) was treated with carbaryl in a private landowner operation.

In 1985, the Gypsy Moth Trapping Program has expanded considerably in numbers of traps placed and in agencies involved. Both the USDA, Forest Service and the Oregon Department of Forestry have increased their participation statewide and are joined this year by the Bureau of Land Management. About 35,000 traps have been placed statewide, 25,000 by Oregon Department of Agriculture and the remaining by the other cooperating agencies. The trapping designs represent varying densities of trap placement depending on the risk of gypsy moth introduction and establishment in a given area. Traps have been placed in all cities, towns and rural population centers at a density of one per square mile. All major highways, rest stops and recreation areas have been trapped as well. In the more populated western one-half of the state, trap densities were increased in the major urban centers up to 16 per square mile, and the trap pattern was expanded to include most of the rural farmland and oak woodlands in the western valleys.

The entire 1100 square mile quarantined area of Lane County was trapped at 16 traps/acre, including all of the spray area. Two "trapout" areas were delimited in the Eugene and Franklin core areas and traps were placed there at densities of 3-9 traps/acre. The portion of Lane County outside of the quarantine line were trapped at 1 trap/mi.^{2}, which was later increased to 16 traps/mi.^{2} in some areas in an effort to delimit single spots as they developed early in the adult flight season. About 15,000 of the 35,000 statewide traps were placed in Lane County.

The results of the insecticide and the "trapout" eradication programs were very encouraging. The original Lane County population was reduced from 19,019 to 1,278 countywide. In 1984, 18,993 moths were detected in the 225,000 acre spray area. Following the control program, only 410 moths were detected, including the "trapout" areas of Eugene and Franklin. Of the 868 moths detected outside of the spray area, about one-fourth were outside of the quarantine line, indicating either some spring dispersal in 1985 and/or a lack of adequate survey date for the area.

Six areas were targeted for trapout programs in 1985, 2 in Salem and 4 in the Portland area. Three of the 6 were placed in areas sprayed in 1984 where small remnant populations (2-13 moths) were detected. All 3 were free of gypsy moths in 1985. The remaining 3 "trapouts" were placed in newly detected infestations with trap counts ranging from 10-12 moths in 1984. The results of these programs were mixed. One site was free of moths, one site yielded 4 moths and the third site yielded 44 moths. The latter site was the only area where egg masses were not detected and removed in 1984.

The statewide trap catch for 1985 is as follows:

Clackamas County	44	1985 "trapout" site
Columbia County	1	New site
Coos County	1	New site
Douglas County	131	New site
Jackson County	1	New site
Lane County	1,278	Several new and old sites
Linn County	10	Scattered new sites
Marion County	25	A few old sites
Multnomah County	135	One 1985 "trapout" and one new site

For the first time since the discovery of an infestation in the Salem area, we are very close to complete eradication. Only 18 moths were detected in the original infestation area and represent two very small spots.

Continued eradication efforts in 1986 should produce the complete elimination of this population.

GYPSY MOTH DETECTION SURVEYS - How Important Are They?

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Indiana Dept. of Natural Resources
Vallonia State Nursery
Vallonia, IN 47281

Every year state natural resource, agriculture, and regulatory agencies conduct gypsy moth detection surveys using pheromone traps. And, if you ask each state 'How important is the survey?', there may be a different answer for each state.

In Indiana, and perhaps in other non-infested states, the detection survey is very important to the gypsy moth management program. The primary goal in Indiana is twofold - 1. to detect the gypsy moth as soon as possible, and 2. to eradicate the introductions. By conducting an extensive and intensive detection survey, this goal can be achieved. The benefit in Indiana when a gypsy moth introduction is found and eradicated is the additional time gained before gypsy moth becomes established and begins to damage the forests.

To date, the detection survey has been highly effective in Indiana. Since 1980, the detection survey located gypsy moth in approximately 193 locations (Table 1). A majority of these locations had one moth in one trap. Other catches were multiple moths in one trap or multiple traps in a localized area catching moths. From 1980 to 1984, the detection survey has found gypsy moth in 31 of 149 locations the following year. The survey has also shown that 7 of the 31 locations (Table 1) were the beginning of an infestation. Thus, the detection survey in Indiana has shown its ability to detect a single moth and the ability to detect the start of an infestation. The survey also has shown that the majority of gypsy moth introductions are 'hitchhikers', as 162 of the 193 locations where gypsy moth was trapped did not have gypsy moth trapped in that location the following year (Table 1).

In addition to locating gypsy moth, the current gypsy moth detection survey in Indiana has the ability to achieve the second part of the primary goal. Table 2 lists the seven infestations detected to date, and the moth catch before and after control measures have been taken. Infestation #1 has been eradicated and #2, #3, and #4 needs one more year of negative catches to be classified as eradicated. Trap catches in infestation #5 have indicated that it has been eradicated. Thus, through a good detection survey, seven infestations have been detected with only two showing current activity.

When the gypsy moth detection survey is conducted in Indiana, it provides information on the number of moths caught, the trap catch patterns and histories, information on the environment around a positive trap, and information on how the moth was introduced. With this information survey personnel in Indiana have been able to make good management decisions and to realize the benefit of a well conducted annual detection survey. To further emphasize the value of the

detection survey and the pheromone trap, consider the history of infestation #3 (Table 2). In 1981, one moth was caught. In 1982, the detection survey delimited the infestation and found 14 moths, the point of introduction, and 8 old egg masses. The detection survey also reported that the environment was not the best for gypsy moth to survive, that the moths caught were smaller than normal (perhaps genetically weak), and that the area was small and localized. Based on this information, the decision was made to use mass trapping to eradicate the infestation. And, as Table 2 indicates, no moths have been trapped for two years, and the infestation is nearing eradication.

Perhaps, other states have some question as to the benefit or importance of a detection survey. The above information may make you take another look at your detection survey and reevaluate the importance that you place on it. Remember, there is a difference in the importance placed on the survey and the importance placed on how efficiently, intensively, and extensively the detection survey is performed. Maybe people conducting a gypsy moth detection survey can learn from another introduced pest, Dutch Elm Disease (DED). Cannon and Worley (1980) stated in their study of DED control programs -

> "Only those municipalities that conducted a high-performance program could be expected to retain 75 percent of their elms for more than 20 to 25 years. Communities that experienced the fewest elm losses had a well founded program, applied it conscientiously and sustained their efforts over the years."

Cannon and Worley's graph (Figure 2) depicts the results of different performance levels for the save-the-elm goal. This graph can be changed to represent gypsy moth and the amount of time before the occurrence of established infestations and defoliations under different performance (or importance) levels of the detection survey (Figure 1).

In Indiana, this comparison has been made. And, the importance of the detection survey and its performance has been recognized. Efforts continue to maintain and increase the current performance level of the gypsy moth detection survey. In Indiana, we believe, as Cannon and Worley state for DED, that a well founded detection survey, conscientiously applied, and sustained over the years will lengthen the time to the first established gypsy moth infestation, first occurrence of noticeable defoliation, and first loss of timber due to gypsy moth defoliation. Currently, every county is surveyed annually with traps placed in towns, cities, and metropolitan areas. Additional traps are placed in campgrounds, rest parks, truck stops, motels, nature preserves, universities, and other special areas. Following detection, delimitation trapping and mass trapping are used to define the introduction and to prepare for eradication.

Reference:

Cannon, William N., Jr., and David P. Worley. 1980. Dutch elm disease control; performance and costs. Northeast For. Exp. St., Broomall, Pa., USDA For. Serv. Res. Pap. NE-457. 8p.

Table 1: The number of Indiana locations where gypsy moth was trapped each year, the number of these locations that had gypsy moth trapped the following year and the number that developed into an infestation.

Year	Number of locations		
	Where GM Trapped	Where GM Was Trapped The Following Year	That Developed Into Infestations
1980	8	3	1
1981	19	8	2
1982	33	7	2
1983	40	6	0
1984	49	7	2
1985	44	-	-
Total	193	31	7

Table 2: The trapping history for seven gypsy moth infestations in Indiana before and after control measures were applied.

Infestation #	Year						
	1979	1980	1981 (number of moths caught)	1982	1983	1984	1985
1 - Vigo	0	3	32[1]	0	0	0	0
2 - Goshen	0	1	5[2]	370[3]	8[4]	0	0
3 - Columbus	0	0	1	14[5]	7	0	0
4 - Ind/Merid.	0	0	0	7	21[6]	0	0
5 - Ind/Pyram.	0	0	0	1	14[6]	7	0
6 - Allen/Hes. Cas.	0	0	0	0	1	10[6]	8
7 - Kosciusko/ TL	0	0	0	0	0	4	21[6]

[1] 63 egg masses found and treated with Sevin 4-oil.
[2] 11 moths trapped in the immediate areas but outside the infestation.
[3] 80+ egg masses found and treated with Sevin 4-oil.
[4] 1 moth trapped in spray block, 7 trapped immediately outside spray block.
[5] 8 old egg masses found and mass trapping started the following year.
[6] Mass trapping started the following year.

Figure 1: Length of time in which gypsy moth detection and eradication can prevent establishment and defoliation under different performance levels of detection surveys.[1]

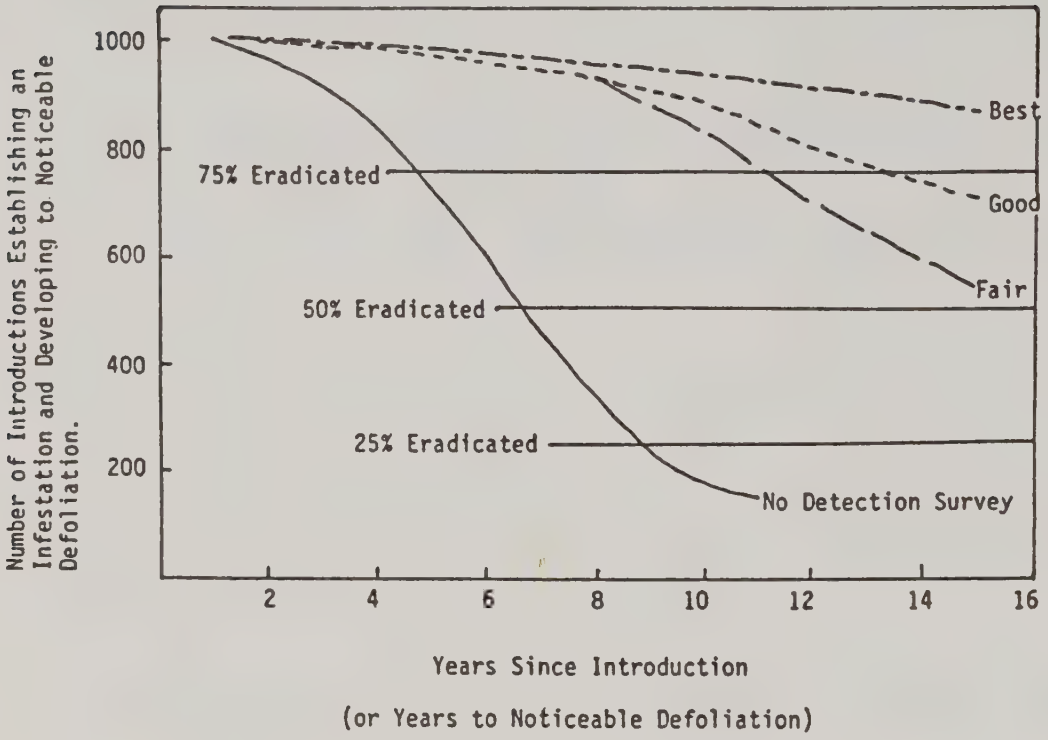
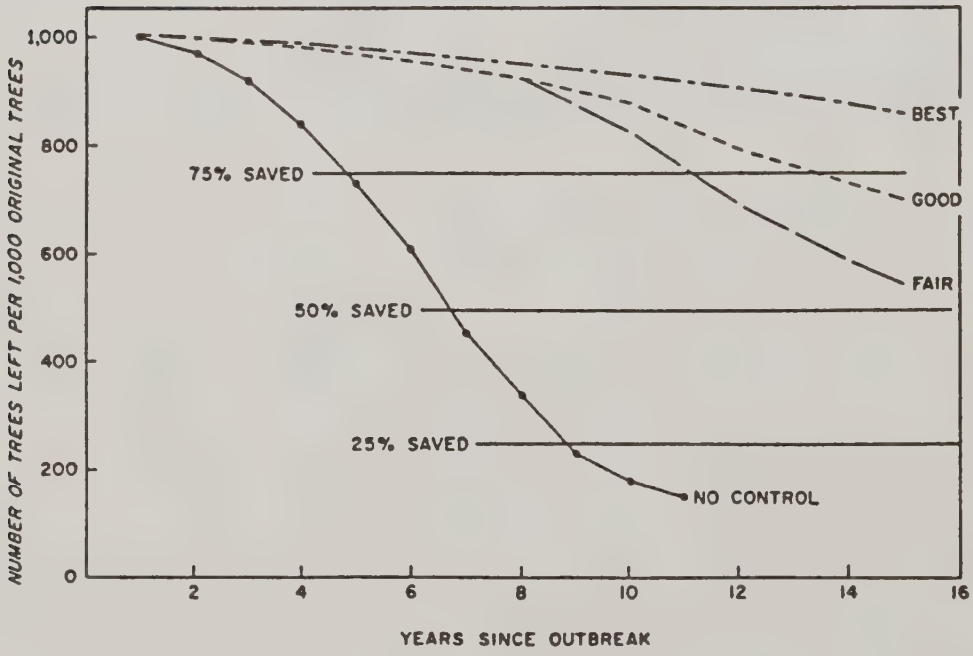


Figure 2.—Length of time in which save-the-elms goals can be achieved with different control-program performance levels.



[1]Cannon, William N., Jr., and David P. Worley. 1980. Dutch elm disease control; performance and costs. Northeast For. Exp. St. Broomall, Pa., USDA For. Serv. Res. Pap. NE-457. 8p.

Gypsy Moth in Virginia - The Battle has Begun

D. J. Schweitzer
Asst. Supervisor
Bureau of Plant Protection
and Pesticide Regulation
VA Dept. of Agriculture
Consumer Services

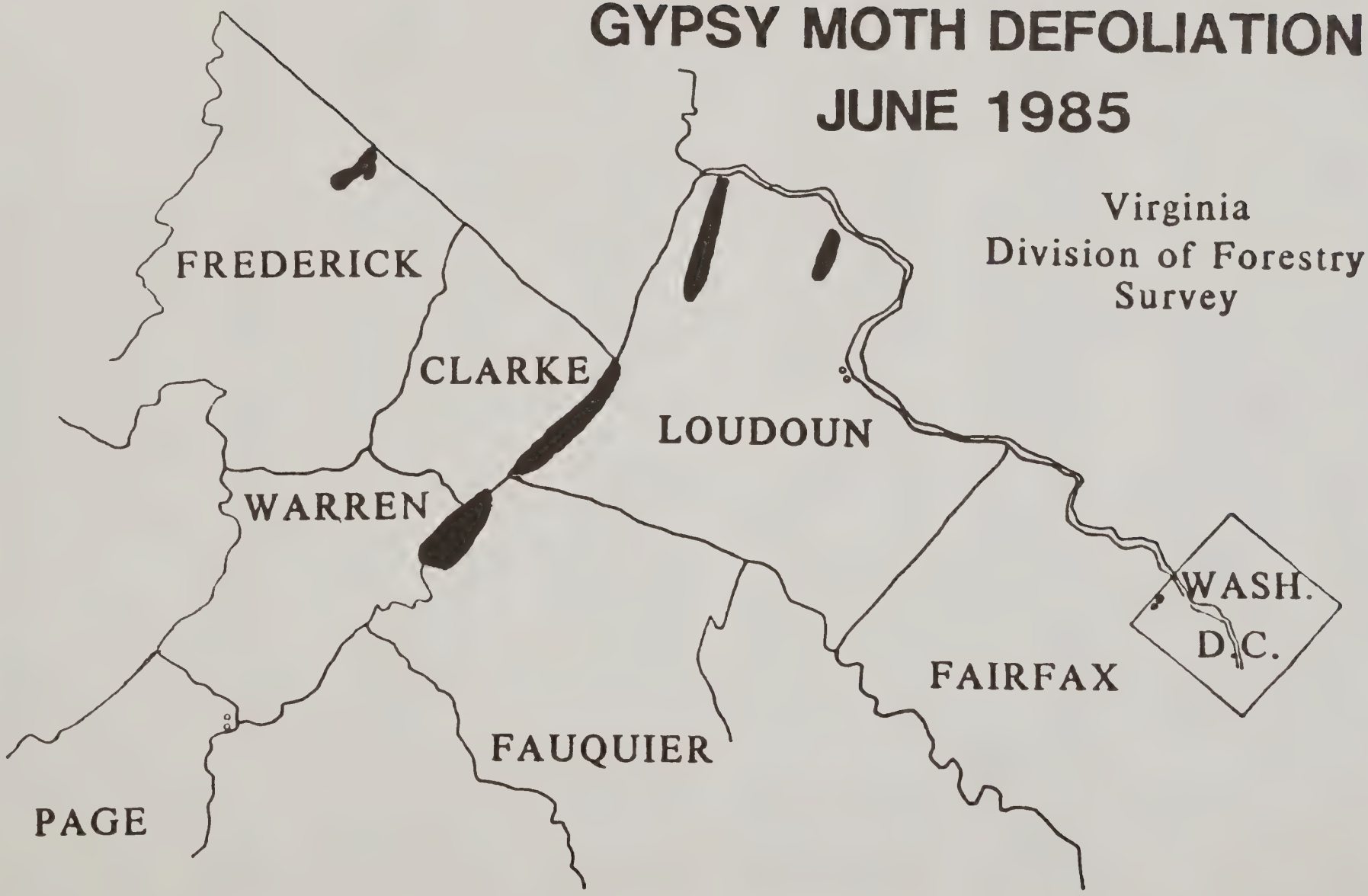
The gypsy moth has arrived in Dixie. In crossing the Mason-Dixon Line, it begins a march into a forest ecosystem dominated by preferred host species. If the pest's status in Central Pennsylvania is an indication of Virginia's future, the Commonwealth is facing a situation not seen since General Sherman's march through the Confederacy.

In 1985, the gypsy moth defoliated 5,200 acres (3,640 acres moderate, 1,560 acres heavy) in Northern Virginia. This is an increase of 1,390% over the 1984 defoliation of 374 acres. The major portion of the defoliation occurred on the mountain ridges in Northwestern Virginia, but severe defoliation also occurred in the metropolitan suburbs of Washington, D.C. (Arlington County). Favorable environmental conditions during larval development is postulated for the significant increase in defoliation and population levels.

The 1986 cooperative gypsy moth suppression program will be the largest in Virginia's history. It is estimated that locality requests for aerial suppression treatments will total approximately 35,000 acres in seven Northern Virginia localities. Actual acreage and treatment material will not be determined until mid-January. In addition, the 1986 program will employ other suppression techniques including ground treatments, parasite release and Luretape.

Even with the size and scope of the 1986 program, areas of severe defoliation are anticipated. The majority of this will be in uninhabited forested areas which do not meet established criteria for participation in the program. (The VA Dept. of Agriculture is concerned primarily with forested residential areas, see guidelines for treatment area selection below - ed.) These areas should provide a reservoir of natural controls reducing the severity of major infestations in the future.

So as Virginia embarks on the suppression path blazed by states to the North, the Commonwealth is prepared to do battle with the Yankee pest. But in this war, the final outcome will be peaceful coexistence.


GYPSY MOTH DEFOLIATION
JUNE 1985
Virginia
Division of Forestry
Survey
FREDERICK
CLARKE
LOUDOUN
WARREN
WASH.
D.C.
FAIRFAX
FAUQUIER
PAGE

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES
BUREAU OF PLANT PROTECTION AND PESTICIDE REGULATION
1100 BANK STREET
RICHMOND, VIRGINIA 23209

The purpose of the Virginia Cooperative Gypsy Moth Suppression Program is to protect forested residential and recreational areas and certain other high-use or high-value forested areas from serious gypsy moth damage.

The Virginia Department of Agriculture and Consumer Services (VDACS) may cooperate, through written agreements, with any local government (the Cooperator) in suppression activities on private and local government-owned lands. Any state funds designated for gypsy moth suppression will be allocated into two categories: 1) low level infestations and/or low level defoliation, and 2) moderate to high level infestations and/or defoliation. Allocations will be determined annually by the Commissioner and, although there may be some adjustments in the allocation of funds, the intent is to provide monies for each category. Suppression agreements in the amount of 100% of VDACS treatment costs may also be made with other State and Federal agencies for the treatment of publicly-owned lands. Separate treatment arrangements with non-governmental bodies, private organizations or individuals will not be considered.

SUMMARY OF COOPERATIVE GYPSY MOTH SUPPRESSION
GUIDELINES FOR VIRGINIA

- The program is for suppression of the gypsy moth in forested residential, recreational, watershed and special-use areas.

- Undeveloped and uninhabited forest tracts will not be considered, unless they affect a qualifying area type.

- Action must be initiated by the Cooperator by submitting a request for assistance described herein.

- VDACS will specify all spray materials to be used, in consultation with Cooperators.

- Public relations activities are required, including individual notifications of property owners in proposed treatment areas and buffer zones associated with aerial treatment areas.

- Cost-sharing is subject to the availability of State funding.

- VDACS will provide technical assistance to enable the Cooperator to meet all provisions of these Guidelines.

Requirements for Qualifying Treatment Areas (Virginia Co-operative Gypsy Moth Suppression Program)

1. Type of Area. Proposed treatment areas must be in one of the following four categories to be considered.

- Forested residential - includes communities, roadside strips with dwellings, zones around threatened communities, and individual permanent or seasonal dwellings.

- Forested recreational - public parks, public picnic areas and roadside rest stops.

- Forested watersheds - must be associated with public water supply reservoir. Non-chemical spray materials will be used in all spraying around such public water reservoirs.

- Forested special areas - includes but not limited to: historic and natural sites, valuable scenic areas and trails, commercial or private campgrounds, sporting clubs (around buildings), resorts, golf courses and ski slopes (forested areas), buffer areas surrounding gypsy moth susceptible crops, and areas where sizeable public investments have already been made for reforestation or protection of valuable trees.

2. Forest Cover. For the purposes of this program, a qualifying area must contain forest tree species that are susceptible to gypsy moth damage and have at least 50% of the area covered by tree foliage. Infested shade trees around dwellings that occur in association with an approved forested spray block may be included when calculating the percentage of canopy cover.

3. Generally undeveloped and uninhabited forest lands are excluded, unless they fit the definition for forested special areas.

Northeast Formulation - Application Working Group

In 1985, representatives of USDA APHIS-PPQ, USDA Forest Service and the Pennsylvania State University agreed to develop a cooperative work plan concerning common problems associated with the formulation and application of biological insecticides in forest ecosystems. A problem statement and set of 4 objectives were identified:

Problem Statement: Optimize the efficiency of biological insecticides which are aerially applied to protect deciduous forests.

> Objective 1. Measure the comparative differences in the deposition and impingement of aerially applied Bt formulations on six candidate sampling devices.
>
> Objective 2. Evaluate through spray tower bioassay, the effect of droplet size, density, and selected adjuvants for biological insecticide formulations on gypsy moth instars.
>
> Objective 3. Conduct field assessment of the vertical and horizontal distribution of biological insecticide formulations in deciduous forest canopies.
>
> Objective 4. Determine the spatial distribution of gypsy moth first through fourth instars in deciduous forest environments.

Cooperative field studies were conducted in 1985 at the APHIS - Aircraft Operations Facility, Mission, Texas (Objective 1); at Black Moshanon State Forest and Gettysburg National Park, Pennsylvania (Objective 3), and at Black Moshanon State Forest (Objective 4). Cooperative laboratory studies are ongoing at Penn State University and the Northeast Forest Experiment Station - Hamden, CT (Objective 2). Final reports concerning these field studies should be available prior to the 1986 field season.

Individuals desiring more information about the 1985 studies or field activities planned for 1986 should contact Dr. Richard Reardon, USDA Forest Service, 180 Canfield St., Morgantown, WV 26505 (304-291-4133, FTS 8-923-4133).

Allegheny National Forest
1985 Gypsy Moth Suppression Project Summary

Robert Acciavatti
U.S. Forest Service
Morgantown, WV

During 1985, the first large-scale gypsy moth suppression project on a National Forest took place. The project, on the Allegheny National Forest located in northwestern Pennsylvania, was successfully conducted with the following results.

Insecticide, Spray Acreage and Cost. A total of 10,477 acres, were aerially treated using 66 spray blocks. B.t., formulated as Dipel 8L, was applied to 1,486 acres at a rate of 20 BIU in 1 gallon of mix per acre. The sticker Plyac was mixed with B.t. at the rate of 2% of total volume. Diflubenzuron, formulated as Dimilin 25W, was applied to 8,991 acres at a rate of 1/2 ounce active ingredient in 1 gallon of mix per acre. Spraying was done between May 16 and 21, 1985, using two helicopters, a Bell 204B, and Bell 206B. Cost of material and application was $12.31/ac for the Dipel 8L spraying and $7.75/ac for Dimilin 25W.

Treatment Results. Based on foliage protection, excellent gypsy moth suppression was achieved with each spray material. Diflubenzuron provided virtually total foliage protection within its spray blocks and only 1.4% of the B.t. spray acreage experienced moderate (30-60%) defoliation.

An assessment of treatment effects on gypsy moth populations used egg mass density changes between the treated and next generation. Within the B.t. treated spray blocks, populations increased by 58 % compared with a 330 % increase in densities in adjacent unsprayed areas. Since foliage protection was achieved within the B.t. blocks, adequate population reduction must have occurred within the generation treated. However, the resurgent gypsy moth populations found in the spray blocks after the egg laying period must have come from late-instar larvae migrating from the eruptive populations nearby the relatively small spray blocks.

Diflubenzuron provided more effective suppression of gypsy populations by reducing them an average of 86 % within spray blocks compared to a 7 % increase in adjacent unsprayed areas.

Natural factors also influenced gypsy moth population change. About 25% of the egg masses failed to hatch at all and only partial hatch was observed in another 37%. The egg mortality may be attributed to abnormally warm temperatures (70 to 79^{o}F) in early winter followed by a sustained 6-8 week period of extremely cold temperatures (-10 to 15^{o}F).

Future Trend. The outbreak which defoliated only 2,024 acres in 1984 and increased to 9,642 acres in 1985, is expected to enlarge in 1986. The oak forest type covers about 100M acres of Allegheny National Forest lands, but only about half of this area has the potential for moderate to severe defoliation this coming summer. As a consequence, suppression may be conducted in 1986, but on no more than about 19,000 acres of high-use, high-value stands where the most susceptible forest tree species and conditions are threatened by the outbreak.

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